E/ECE/324
E/ECE/TRANS/505 } Rev.1/Add.21/Rev.2/Amend.3

25 June 1991

AGREEMENT

CONCERNING THE ADOPTION OF UNIFORM CONDITIONS OF APPROVAL AND RECIPROCAL RECOGNITION OF APPROVAL FOR MOTOR VEHICLE EQUIPMENT AND PARTS

done at Geneva on 20 March 1958

Addendum 21 – Regulation No. 22 annexed to the Agreement

Date of entry into force as an annex to the Agreement: 1 June 1972

Date of entry into force of the 03 series of amendments: 19 July 1988

Revision 2 – Amendment 3

Incorporating supplement 1 to the 03 series of amendments – Date of entry into force: 5 May 1991

UNIFORM PROVISIONS CONCERNING THE APPROVAL OF PROTECTIVE HELMETS AND OF THEIR VISORS FOR DRIVERS AND PASSENGERS OF MOTOR CYCLES AND MOPEDS

UNITED NATIONS

Paragraph 1. add at the end:

"... and to the visors fitted to such helmets or intended to be added to them,"

Paragraph 2. insert a new paragraph 2.14. to read:

"2.14. 'Visor type' means a category of visors which do not differ substantially in such essential characteristics as:

2.14.1. The trade name or mark, or

2.14.2. The materials, dimensions, manufacturing processes (such as extrusion of moulding), colour, surface treatment, system of attachment to the helmet."

Paragraph 2.14., 2.15., 2.16. should be renumbered accordingly.

Paragraph 2.15. (new) amend to read:

"2.15. 'approval test' means a test to determine the extent to which a protective helmet type and/or a visor type submitted for approval is capable of satisfying the requirements."

Paragraph 2.16. (new) amend to read:

"2.16. 'production quality test'... to produce helmets and/or visors in conformity with the helmets and/or visors submitted for type approval,"

Paragraph 2.17. (new) amend to read:

"'a routine testing'... a number of helmets and/or visors selected from ..."

Paragraph 3. amend to read:

"3. APPLICATION FOR APPROVAL

3.1. APPLICATION FOR APPROVAL OF A PROTECTIVE HELMET TYPE

3.1.1. The application for approval of a protective helmet type, without or with one or more visor types, shall be submitted by the helmet manufacturer or by the holder of the manufacturer's name or trade mark or by his duly accredited representative, and for each type the application shall be accompanied by the following:

3.1.1.1. Drawings in triplicate to a scale of 1:1, in sufficient detail to permit identification of the helmet type, including the methods of assembly. The drawings shall show the position intended for the approval mark as set out in paragraph 5.1.4.1.,

3.1.1.2. A brief technical specification stating the materials used.

3.1.1.3. If the helmet is fitted with one or more visors:

3.1.1.3.1. Drawings in triplicate to a scale of 1:1, in sufficient detail to permit identification of the visor type and of the means of attachment to the helmet. The drawings shall show the position intended for the approval mark as set out in paragraph 5.1.4.1.,

3.1.1.3.2. A technical description of the visor stating the materials used, the manufacturing processes and, where appropriate, the surface treatment,

3.1.1.4. Ten helmets, with or without visors, taken from a reserve of not less than 20 specimens of various sizes, at least 9 of which shall be subjected to tests and 1 retained by the technical service responsible for conducting the approval test,

3.1.1.5. For each visor type, if any, seven visors taken from a sample of not less than fourteen specimens. Six visors shall be subjected to the tests and the seventh shall be retained by the technical service responsible for conducting the approval test.

3.2. APPLICATION FOR APPROVAL OF A VISOR TYPE

3.2.1. The application for approval of a visor type shall be submitted by the visor manufacturer or by the holder of the manufacturer's name or trade mark or by his duly accredited representative, and for each type the application shall be accompanied by:

3.2.1.1. Drawings in triplicate to a scale of 1:1, in sufficient detail to permit identification of the visor type and of its means of attachment to the helmet. The drawings shall show the position intended for the approval mark as set out in paragraph 5.2.4.1.,

3.2.1.2. A technical description stating materials used, the manufacturing processes and, where appropriate, the surface treatment,

3.2.1.3. List of approved helmet types to which the visor may be fitted,

3.2.1.4. Seven visors taken from a sample of not less than 14 specimens and 1 helmet to which the visors are intended to be fitted. Six visors shall be subjected to the tests and the seventh shall be retained by the technical service responsible for conducting the approval test."

Add a new paragraph 3.4. to read as follows:

"3.4. The competent authority shall verify the existence of satisfactory arrangements for ensuring effective control of the conformity of production before type approval is granted."

Paragraph 4. amend to read:

"4. MARKINGS

4.1. The protective helmets submitted for approval in conformity with paragraph 3.1. above shall bear:

4.1.1. On the helmet, the applicant's trade name or mark and an indication of the size.

4.1.2. On the visor, if any, the applicant's trade name or mark.

4.2. The visors submitted for approval in conformity with paragraph 3.2. above shall bear the applicant's trade name or mark."

Add new paragraphs 4.3. and 4.4. to read as follows:

"4.3. The marking shall not be placed within the main visibility area.

4.4. The marking shall be clearly legible and indelible."

Paragraph 5. amend to read:

"5. APPROVAL

5.1. Approval of a protective helmet type, without or with one or more visor types.

(Renumber existing paragraphs 5.1.1. and 5.1.2. as 5.1.10. and 5.1.11.)

5.1.1. If the protective helmets and the visors, if any, submitted in pursuance of paragraph 3.1.1.4. above meet the requirements of this Regulation, approval shall be granted.

5.1.2. An approval number shall be assigned to each type approved. Its first two digits (at present 03 corresponding to the 03 series of amendments which entered into force on 19 July 1988) shall indicate the series of amendments incorporating the most recent major technical amendments made to the Regulation at the time of issue of the approval. The same Contracting Party shall not assign the same number to another helmet type covered by this Regulation.

5.1.3. Notice of approval or of extension or refusal of approval of a protective helmet type, without or with one or more visor types pursuant to this Regulation shall be communicated to the Parties to the 1958 Agreement applying this Regulation, by means of a form conforming to the model in annex 1A to this Regulation.

5.1.4. In addition to the marks described in paragraph 4.1.1. above, the following particulars shall be indicated on every protective helmet conforming to a type approved under this Regulation by means of the labels referred to in paragraph 5.1.7. below:

5.1.4.1. An international approval mark consisting of:

5.1.4.1.1. a circle surrounding the letter 'E' followed by the distinguishing number of the country which has granted approval,

5.1.4.1.2. the approval number, and,

5.1.4.1.3. after the approval number, a dash followed by a production serial number. The production serial numbers shall be continuous for all protective helmets of the types approved in the same country, and each authority shall keep a register from which it can check that the type and production serial numbers correspond.

5.1.5. In addition to the marks described in paragraph 4.1.2. above, the following particulars shall be affixed visibly and in a readily accessible place to every visor, if any, conforming to a type approved with a helmet under this Regulation:

5.1.5.1. An international approval mark consisting of:

5.1.5.1.1. a circle surrounding the letter 'E' followed by the distinguishing number of the country which has granted approval.

5.1.5.1.2. a reference alphanumerical number.

5.1.6. Annex 2 to this Regulation gives examples of arrangements of the approval marks.

5.1.7. In order to be considered as approved under this Regulation, subject to the provisions of paragraph 9 below, every protective helmet shall bear, sewn to its retention system, one of the labels referred to in paragraph 5.1.4. above. A different method of securing the label is authorized if it complies with the above provisions.

5.1.8. The labels referred to in paragraph 5.1.7. above may be issued either by the authority which has granted the approval or, subject to that authority's authorization, by the manufacturer.

5.1.9. The label referred to in paragraph 5.1.7. above shall be clearly legible and resistant to wear."

Paragraph 5.2. amend to read:

"5.2. Approval of a visor type

5.2.1. Where the visors submitted in accordance with paragraph 3.2.1.4. above meet the requirements of paragraphs 6.15. and 7.8. of this Regulation, approval shall be granted.

5.2.2. An approval number shall be assigned to each type approved. Its first two digits (at present 03 corresponding to the 03 series of amendments which entered into force on 19 July 1988) shall indicate the series of amendments incorporating the most recent major technical amendments made to the Regulation at the time of issue of the approval. The same Contracting Party shall not assign the same number to another visor type covered by this Regulation.

5.2.3. Notice of approval or of extension or refusal of approval of a visor type pursuant to this Regulation shall be communicated to the Parties to the 1958 Agreement applying this Regulation, by means of a form conforming to the model in annex 1B to this Regulation.

5.2.4. In addition to the marks prescribed in paragraph 4.2. above, the following particulars shall be affixed visibly and in a readily accessible place to every visor conforming to a type approved under this Regulation:

5.2.4.1. An international approval mark consisting of:

5.2.4.1.1. the approval symbol described in paragraph 5.1.4.1.1., and

5.2.4.1.2. the approval number.

5.2.5. The approval mark shall be clearly legible and resistant to wear.

5.2.6. The marking shall not be placed within the main visibility area.

5.2.7. Annex 2B to this Regulation gives an example of the approval mark for a visor."

Paragraph 6. amend to read as follows:

"6.15. VISORS

6.15.1. The systems of attachment of a visor to a helmet shall be such that the visor is removable.

It must be possible, to manoeuvre the visor out of the field of vision with a simple movement of one hand. However, the latter prescription may not be required for helmets which do not provide chin protection provided that a lable is attached to the helmet to the effect of warning the purchaser that the visor cannot be manoeuvred.

6.15.2. Angle opening (see annex 9)

6.15.3. Visibility area

6.15.3.1. The visor shall not comprise any part liable to impair the user's peripheral vision as defined in paragraph 6.14. whatever the position of the visor is. Furthermore, the lower edge of the visor shall not be situated in the downward field of vision of the user as defined in paragraph 6.14. when the visor is in closed position. The surface of the visor in the peripheral field of vision of the helmet may however include:

The lower edge of the visor, provided that it is made of a material with at least the same transmittance as the rest of the visor,

A device to allow the visor to be manoeuvred. However, if this device is situated within the visibility area of the visor defined in paragraph 6.15.3.2. below it shall be at the lower edge and present a maximum height (h) of 10 mm and its width (l) shall be such that the product (h x l) at the most is equal to 1.5 cm^2. Moreover, it must be made of a material with at least the same transmittance as the visor and it must be free of any engraving, paint or other covering feature,

Fixings and devices to allow the visor to be manoeuvred if they are situated outside of the visibility area of the visor and if the total surface of these parts, including devices, if any, to allow the visor to be manoeuvred does not exceed 2 cm^2, possibly distributed on each side of the area.

6.15.3.2. The visibility area of the visor is defined by:

A dihedron defined by the reference plane of the headform and a plane forming an angle of at least 7° upwards, its edge being the straight line L_1L_2, with points L_1 and L_2 representing the eyes,

Two segments of dihedral angles symmetrical to the median vertical longitudinal plane of the headform. Each of these dihedral angles is defined by the median vertical longitudinal plane of the headform and the vertical plane forming with this plane an angle of 90°, its edge being the straight line LK,

and the lower edge of the visor.

6.15.3.3. To determine the visibility area as defined in paragraph 6.15.3.2. above, the helmet fitted with the visor being tested shall be

placed on a test headform of suitable size in accordance with the provisions of paragraph 7.3.1.3.1., the visor then being placed in a closed position.

6.15.3.4. Visors shall be free from any significant defects likely to impair the vision, such as bubbles, scratches, inclusions, dull spots, holes, mould marks, scratches or other defects originating from the manufacturing process in the visibility area."

Add a new paragraph 6.15.4. as follows:

"6.15.4. Visors shall in addition be sufficiently transparent, shall not cause any noticeable distortion of object as seen through the visor, and shall not give rise to any confusion between the colours used in road traffic signs and signals."

Paragraph 7. add at the end a new paragraph to read:

"7.8. VISOR TESTS

7.8.1. Sampling and use of samples.

The six visors are used as follows:

Paragraph	Test	1	2	3	4	5	6	7	T
6.15.3.	Visibility area of the visor	X						RETAINED	1
6.15.3.4. 6.15.4.	Quality of material and surface	X	X	X					3
7.8.2.	Mechanical characteristics				X	X	X		3
7.8.3.	Optical qualities and scratch resistance	X	X	X					3

7.8.2. Mechanical characteristics

7.8.2.1. The helmet, fitted with its visor and previously conditioned in accordance with the provisions of paragraph 7.2.3., shall be placed in accordance with the provisions of paragraph 7.3.1.3.1. on a test headform of suitable size. The test headform selected from among those shown in annex 4 shall be so placed that the basic plane is vertical.

7.8.2.2. The test apparatus used shall be as described in paragraph 7.4.3., the metal punch being placed in contact with the visor in the

vertical symmetrical plane of the headform to the right of point K. The apparatus shall be designed in such a way that the punch is stopped not less than 5 mm above the headform.

7.8.2.3. When the drophammer falls from a height of 1 + 0.005 m, measured between the top face of the punch and the lower face of the hammer, it shall be ascertained that:

7.8.2.3.1. no sharp splinters are produced if the visor is shattered. Any segment having an angle less than 60° shall be considered as a sharp splinter.

7.8.3. Optical qualities and scratch resistance

7.8.3.1. Test procedure

7.8.3.1.1. The test piece shall be taken from the flattest part of the visor in the area specified in paragraph 6.15.3.2. and its minimum dimensions shall be 50 mm x 50 mm. The test shall be carried out on the face corresponding to the outside of the visor.

7.8.3.1.2. The test piece shall undergo ambient-temperature and hygrometry conditioning in accordance with paragraph 7.2.1.

7.8.3.1.3. The test shall comprise the following sequence of operations:

7.8.3.1.3.1. The surface of the test piece shall be washed in water containing 1% detergent and rinsed with distilled or demineralized water, then carefully dried with a grease-free and dust-free linen cloth.

7.8.3.1.3.2. Immediately after drying, the luminous transmittance and the light diffusion before abrasion are measured according to one of the methods specified in annex 11.

7.8.3.1.3.3. The test piece shall then be subjected to the abrasion test described in annex 10, during which 3 kg of abrasive material shall be projected at the sample.

7.8.3.1.3.4. Following the test, the test piece shall again be cleaned in accordance with paragraph 7.8.3.1.3.1.

7.8.3.1.3.5. Immediately after drying the light diffusion after abrasion shall be measured by using again the same method used in accordance with paragraph 7.8.3.1.3.2. above.

7.8.3.2. Requirements

7.8.3.2.1. Three similar test pieces taken from the area specified in paragraph 6.15.3.2. of the visor shall meet the requirements of paragraphs 7.8.3.2.1.1. and 7.8.3.2.1.2.

7.8.3.2.1.1. The luminous transmittance measured according to one of the two methods specified in annex 11 shall not be less than 75%.

7.8.3.2.1.2. The light diffusion shall not exceed the following values:

Before abrasion	After abrasion
0.65 cd/m^2/1 a/	5.0 cd/m^2/1 a/
2.5% b/	20% b/

a/ measured according to annex 11, Method (a);
b/ measured according to annex 11, Method (b)."

Paragraph 9.1. amend to read:

"9.1. Every helmet and visor bearing ..."

Paragraph 9.2.4. amend to read:

"... to check conformity with the helmet or visor type approved and ..."

Add a new paragraph 9.3.1.1., as follows:

"9.3.1.1. Starting production each new visor type (incorporated in the helmet approval or approved as a single visor) shall be subjected to production quality tests. For this purpose a number of visors according to table 9.4.3. 'testing-schedule for visors' shall be subjected to tests selected by the technical service from among those described in paragraphs 6 and 7 of this Regulation, and in all cases to the tests prescribed in paragraphs 7.8.2. and 7.8.3."

Paragraph 9.4.1. amend to read:

"is carried out, so as to guarantee uniformity of helmet and/or visor production and conformity to the provisions ..."

Paragraph 9.4.2. amend to read:

"... and ensure the uniformity of helmet and/or visor production, allowing ..."

Paragraph 9.4.3. amend to read:

"9.4.3. The helmets and/or visors selected for verification of conformity shall be subjected to tests, which may be selected in agreement with the competent authorities, from among those described in paragraph 7.

The manufacturer or his duly accredited representative shall in particular be required to carry out the following tests, or to arrange for them to be carried out, at intervals proportional to the weekly production of helmets and/or visors of an approved type, as indicated below:

Testing schedule for helmets

Weekly production by enterprise	Impact-absorption test	Retention-system test
Up to 800 helmets	1% of production	0.5% of production
From 801 to 1 200 helmets	8 helmets	4 helmets
From 1 201 to 3 200 helmets	13 helmets	7 helmets
From 3 201 to 10 000 helmets	20 helmets	10 helmets
More than 10 000 helmets	32 helmets	16 helmets

Testing schedule for visors

Weekly production by enterprise	Tests required (specifications of paragraphs)	
	7.8.2. 7.8.3.	6.15.2. 6.15.3. 6.15.4.
Up to 800 visors	1% of production at least 2 visors	0.2% of production at least 1 visor
From 801 to 1 200 visors	8 visors	2 visors
From 1 201 to 3 200 visors	13 visors	3 visors
From 3 201 to 10 000 visors	20 visors	5 visors
More than 10 000 visors	32 visors	8 visors

The holder of the approval shall be required, whenever sampling has revealed a failure to conform to the test requirements for a particular type, to take all measures necessary to restore conformity of production in that respect."

Paragraph 9.4.4.2. amend to read:

"... tests, the minimum number of helmets and/or visors thus selected ..."

Paragraph 9.5.1. amend to read:

"... carried out on helmets and/or visors offered ..."

Paragraph 9.5.2. replace:

"helmets" by 'helmets and/or visors'"

Paragraph 9.5.3. amend to read:

"9.5.3. A sample shall be taken from each batch in conformity with the requirements of paragraph 9.5.4. The samples thus taken shall be subjected to tests selected among those described in paragraphs 6 and 7 of this Regulation. Such tests shall include at least:

9.5.3.1. for helmets two impact-absorption tests in accordance with paragraph 7.3. and the retention-system test described in paragraph 7.6.,

9.5.3.2. for visors the tests in accordance with paragraphs 7.8.2. and 7.8.3."

Paragraph 9.5.4. amend to read:

"... a batch of helmets and/or visors shall satisfy ..."

Paragraph 10. amend to read:

"10. MODIFICATION AND EXTENSION OF APPROVAL OF A HELMET OR A VISOR TYPE

10.1. Every modification of the helmet and/or the visor type shall be notified to the administrative department which approved the helmet and/or the visor type. The department may then either:

10.1.1. Consider that the modifications made are unlikely to have an appreciable adverse effect and that in any case the protective helmet and/or visor still complies with the requirements; or

10.1.2. Require a further test report from the technical service responsible for conducting the tests.

10.2. Confirmation or refusal of approval, specifying the alterations shall be communicated by the procedure specified in paragraphs 5.1.3. and 5.2.3. above to the Parties to the Agreement applying this Regulation.

10.3. The competent authority issuing the extension of approval shall assign a series number for such an extension and inform thereof the other Parties to the 1958 Agreement applying this Regulation by means of a communication form conforming to the model in annex 1A or annex 1B to this Regulation."

Paragraph 11. amend to read:

"11. PENALTIES FOR NON-CONFORMITY OF PRODUCTION

11.1. The approval granted in respect of a helmet or a visor type pursuant to this Regulation may be withdrawn if the requirements set forth above are not met.

11.2. If a Contracting Party to the Agreement applying this Regulation withdraws an approval it has previously granted, it shall forthwith so notify the other Contracting Parties applying this Regulation, by means of a communication form conforming to the model in annex 1A or annex 1B to this Regulation."

Paragraph 12. amend to read:

"12. PRODUCTION DEFINITELY DISCONTINUED

If the holder of the approval completely ceases to manufacture a helmet or a visor type approved in accordance with this Regulation, he shall so inform the authority which granted the approval. Upon receiving the relevant communication that authority shall inform thereof the other Parties to the 1958 Agreement applying this Regulation by means of a communication form conforming to the model in annex 1A or annex 1B to this Regulation."

Add new paragraphs 12.4. and 12.5., to read:

"12.4. Every protective helmet offered for sale shall bear a label showing the type or types of visor that have been approved at the manufacturer's request.

12.5. Every visor offered for sale shall bear a label showing the types of protective helmet for which it has been approved."

Paragraph 14. amend to read:

"14. The Parties to the 1958 Agreement applying this Regulation shall communicate to the United Nations Secretariat the names and addresses of the technical services responsible for conducting approval tests and of the administrative departments which grant approval and to which forms certifying approval or extension or refusal or withdrawal of approval, issued in other countries, are to be sent."

Annex 1 A and annex 1 B should read as follows:

"Annex 1 A

COMMUNICATION

(Maximum format: A4 (210 x 297 mm))

issued by: Name of administration
.....
.....
.....

concerning: 2/ APPROVAL GRANTED
APPROVAL EXTENDED
APPROVAL REFUSED
APPROVAL WITHDRAWN
PRODUCTION DEFINITELY DISCONTINUED

of a type of protective helmet without/with 2/ one/more 2/ visor type(s)

pursuant to Regulation No. 22

Approval No. ..... Extension No. .....

1. Trade mark: .....
2. Type: .....
3. Sizes: .....
4. Manufacturer's name: .....
5. Address: .....
6. If applicable, name of manufacturer's representative: .....
7. Address: .....
8. Brief description of helmet: .....
9. Type of visor or visors: .....
10. Brief description of visor or visors: .....
11. Submitted for approval on: .....
12. Technical service responsible for conducting approval tests: .....
13. Date of report issued by that service: .....
14. Number of report issued by that service: .....
15. Comments: .....
16. Place: .....
17. Date: .....
18. Signature: .....
19. The following documents, bearing the approval number shown above, are available on request .....

1/ Distinguishing number of the country which has granted/extended/refused/withdrawn approval (see approval provisions in the Regulation).

2/ Strike out what does not apply.

Annex 1 B

COMMUNICATION

(Maximum format: A4 (210 x 297 mm))

issued by: Name of administration
.....
.....
.....

concerning: 2/ APPROVAL GRANTED
APPROVAL EXTENDED
APPROVAL REFUSED
APPROVAL WITHDRAWN
PRODUCTION DEFINITELY DISCONTINUED

of a type of helmet visor

pursuant to Regulation No. 22

Approval No. ..... Extension No. .....

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1. Trade mark: .....
2. Type: .....
3. Manufacturer's name: .....
4. Address: .....
5. If applicable, name of manufacturer's representative: .....
6. Address: .....
7. Brief description of visor: .....
8. Types of helmet to which the visor may be fitted: .....
9. Submitted for approval on: .....
10. Technical service responsible for conducting approval tests: .....
11. Date of report issued by that service: .....
12. Number of report issued by that service: .....
13. Remarks: .....
14. Place: .....
15. Date: .....
16. Signature: .....
17. The following documents, bearing the approval number shown above, are available on request .....

1/ Distinguishing number of the country which has granted/extended/refused/withdrawn approval (see approval provisions in the Regulation).

2/ Strike out what does not apply."

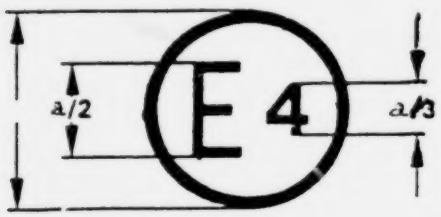
Annex 2 amend to read as follows:

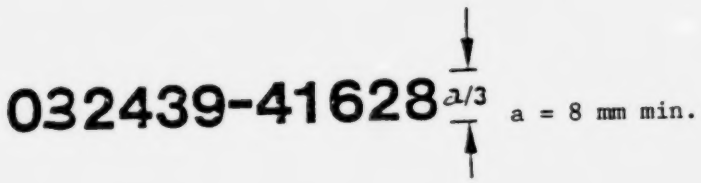
"Annex 2 A

I. PROTECTIVE HELMET

ARRANGEMENT OF APPROVAL MARK FOR A PROTECTIVE HELMET
WITHOUT OR WITH ONE OR MORE TYPES OF VISOR

(See paragraph 5.1 of this Regulation)





The above approval mark affixed to a protective helmet shows that the helmet type concerned has been approved in the Netherlands (E4) under approval number 032439. The approval number shows that approval was granted in accordance with the requirements of the Regulation already incorporating the 03 series of amendments at the time of approval, and that its production serial number is 41628.

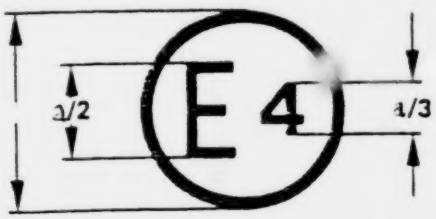
Note: The approval number and the production serial number shall be placed close to the circle and either above or below the letter "E" or to the left or right of that letter. The digits of the approval number and of the production serial number shall be on the same side of the letter "E" and face the same direction. The use of Roman numerals as approval numbers should be avoided so as to prevent any confusion with other symbols.

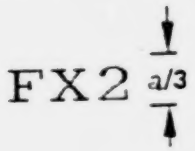
Annex 2 A

II. VISOR

ARRANGEMENT OF APPROVAL MARK FOR A VISOR FITTED TO A PROTECTIVE HELMET

(See paragraph 5.1 of this Regulation)





a = 8 mm min.

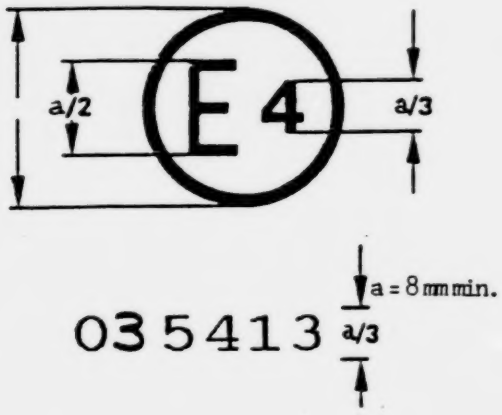
The above approval mark affixed to a visor shows that the visor concerned has been approved in the Netherlands (E4) under reference FX2, and that it forms an integral part of an approved helmet.

Note: The visor reference shall be placed close to the circle and either above or below the letter "E" or to the left or right of that letter. The reference symbols shall face the same direction. The use of numerals alone for the reference should be avoided so as to prevent any confusion with other symbols.

Annex 2 B

EXAMPLE OF APPROVAL MARK FOR A HELMET VISOR

(See paragraph 5.2.6 of this Regulation)



The above approval mark affixed to a visor shows that the visor type concerned has been approved in the Netherlands (E4) under approval number 035413. The approval number shows that approval was granted in accordance with the requirements of the Regulation incorporating the 03 series of amendments at the time of approval.

Note: The approval number shall be placed close to the circle and either above or below the letter "E" or to the left or right of that letter. The digits of the approval number shall be on the same side of the letter "E" and face the same direction. The use of Roman numerals as approval numbers should be avoided so as to prevent any confusion with other symbols.

Add the following new annex 10:

"Annex 10

ABRASION TEST PROCEDURE

1. DESCRIPTION OF THE TEST EQUIPMENT

The sand spray test equipment consists essentially of that illustrated in Figure 1. The gravity tube consists of three separate rigid polyvinylchloride tubes (PVC hard) of the same diameter, with two polyamide sieves mounted in between. The sieves should have a mesh size of 1.6 mm. The speed of the turntable shall be 250 ± 10 r.p.m.

2. ABRASIVE MATERIAL

Natural quartz sand of a grain size of 0.50/0.7 mm, with no oversize, obtained by sieving on wire sieves complying with ISO 565 with a mesh size of 0.50 mm and 0.7 mm. The sand may be used up to 10 times.

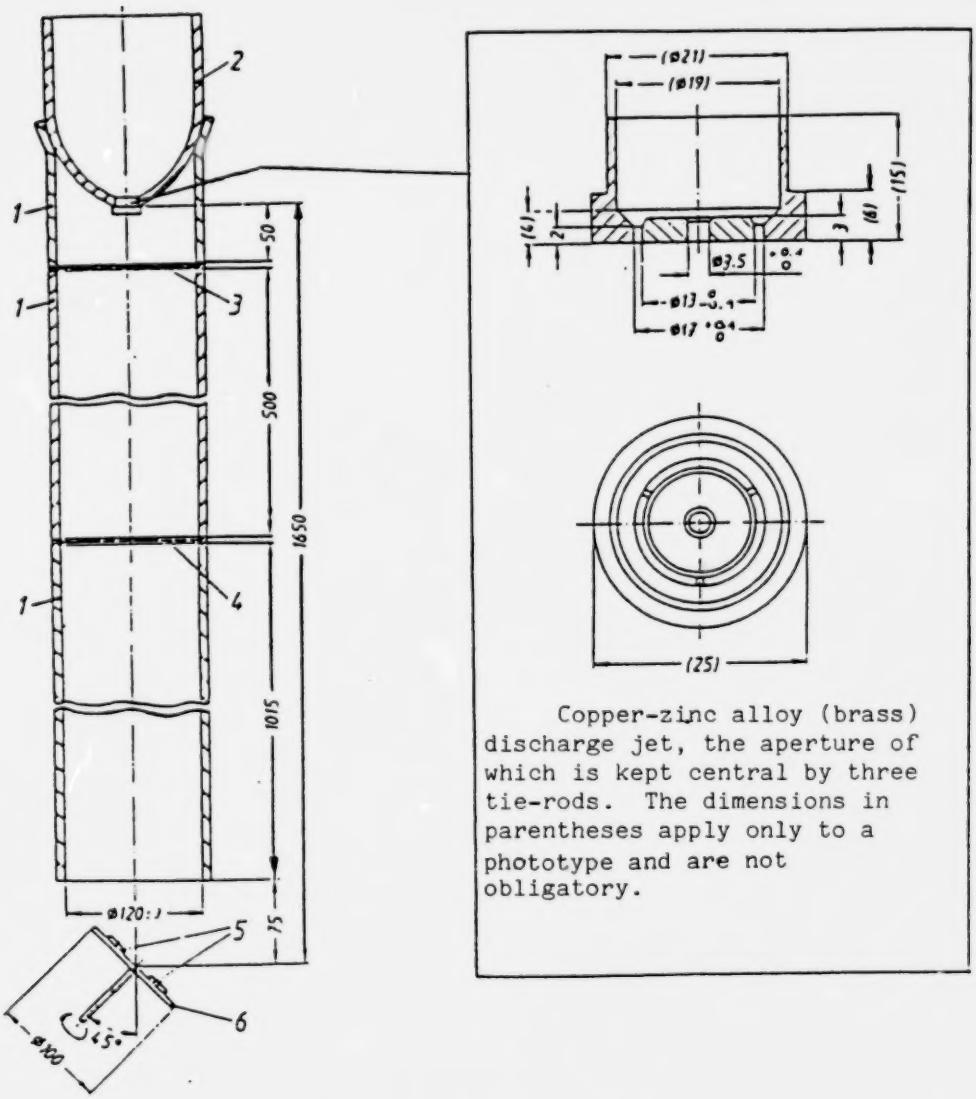
3. TEST PROCEDURE

Three kilograms of 0.50/0.7 mm grain size quartz sand is allowed to drop through a gravity tube from a height of 1.650 mm onto the sample to be tested. The test piece and, if necessary, a control-piece are mounted on a turntable, the axis of which is at a 45 degree angle to the direction of the sand.

The test pieces are mounted on the turntable in such a way that the area to be measured does not extend beyond the turntable. Whilst the turntable is rotating, 3 kg of sand are allowed to spray over the test pieces.

Annex 10 (continued)

Figure 1: Sand spray equipment



Copper-zinc alloy (brass) discharge jet, the aperture of which is kept central by three tie-rods. The dimensions in parentheses apply only to a phototype and are not obligatory.

1. Parts of gravity tube
2. Container with discharge jet as figure 2, containing at least 3 kg sand
3. Upper sieve
4. Lower sieve
5. Test piece
6. Test piece holder (turnable)"

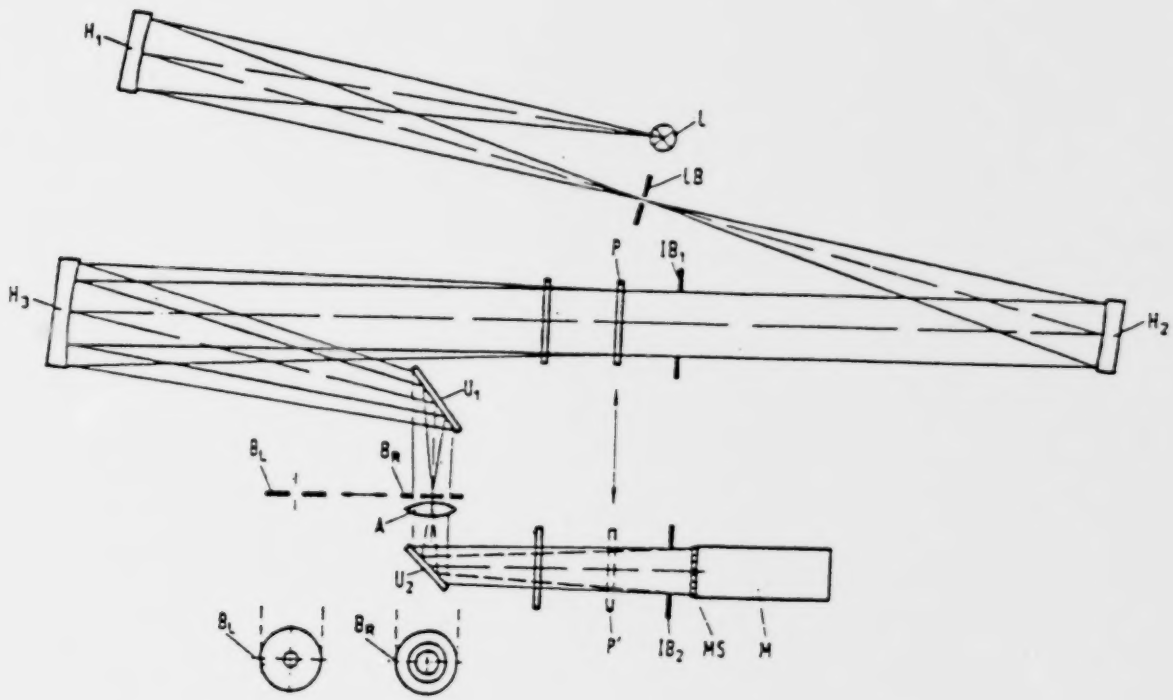
Add the following new annex 11

"Annex 11

METHODS OF MEASURING LIGHT DIFFUSION AND LIGHT TRANSMISSION COEFFICIENT

1. METHOD (a)

1.1. EQUIPMENT



This assembly collects all the unscattered light originating from the visor up to an angle of 0.72 degree (using diaphragm B_L) and all scattered light between the angles 1.5 degrees and 2 degrees in relation to the optical axis using diaphragm B_R. The angular area is important in the case of night riding, where a range in the immediate proximity of headlights has to be observed. The following dimensions are an information for the possible realization:

L	High-pressure xenon lamp (for example XBO 75 W)
H_1	Spherical concave mirror: focal length 150 mm; diameter 40 mm
H_2	Spherical concave mirror: focal length 300 mm; diameter 40 mm
H_3	Spherical concave mirror: focal length 300 mm; diameter 70 mm
A	Achromatic lens: focal length 200 mm; diameter 30 mm
U_1, U_2	Flat mirrors
B_R	Annular diaphragm: diameter of outer circle 21.00 mm; diameter of inner circle 15.75 mm
B_L	Circular diaphragm: diameter of aperture 7.5 mm
M_L	Silicon detector corrected according to curve V (2) with diffusing screen MS
IB_1	Iris-diaphragm to adjust diameter of field of observation, diameter 40 mm
IB_2	Iris-diaphragm to eliminate edge effects from IB_1
LB	Circular diaphragm, diameter of aperture 1 mm
P, P'	Positions of visor.

Spherical mirror H_1 forms an image of light source L at diaphragm LB which is in the focal plane of H_2. The concave mirror H_3 forms an image of diaphragm LB in the plane of diaphragms B_L and B_R. The achromatic lens A is positioned immediately behind the diaphragm so that a reduced image of the test sample in position P appears on diffusing screen MS. The image of iris-diaphragm IB_1 is simultaneously formed on IB_2.

1.2. MEASUREMENT

The visor is positioned in the parallel beam to position P, then diaphragm B_L is set in place. The flux T_{1L} falling onto the detector corresponds to the undiffused light transmitted by the sample. Diaphragm B_L is then replaced by annular diaphragm B_R; flux T_{1R} falling onto the detector corresponds to the total diffused light originating from the visor and from the apparatus. The visor is then placed at position P'. Flux T_{2R} falling onto the detector corresponds to the diffused light coming from the apparatus only. The

visor is then brought out of the light beam (e.g. between P and P'). The flux T_{0L} falling on the detector with the diaphragm BL in place corresponds to the total light.

1.3. OPTICAL QUALITIES; DEFINITIONS

1.3.1. Luminous transmittance:

$$\tau = T_{1L}/T_{0L} \times 100$$

1.3.2. Light diffusion before abrasion DB:

$$DB = 597 \times (T_{1R} - T_{2R})/T_{1L}$$

1.3.3. Light diffusion after abrasion:

$$DA = 597 \times (T_{1R} - T_{2R})/T_{1L}$$

2. METHOD (b)

2.1. EQUIPMENT (See figure 1)

The beam of a collimator K of semi-divergence $\gamma/2 = 17.4 \times 10^{-4}$ rd is limited by a diaphragm D_1 with an opening of 12 mm against which the sample holder is placed.

An achromatic convergent lens L_2 corrected for spherical irregularities links the diaphragm D_1 with the receiver R, the diameter of the lens L_2 being such that it does not restrict the light diffused by the sample in a cone with a top half angle of $\beta/2 = 14°$.

An annular diaphragmn D_2 with extended angles $\alpha o/2 = 1°$ and $\alpha max/2 = 12°$ is placed in a focal image plane of the lens L_2 (see figure 2).

The non-transparent central part of the diaphragm is necessary to eliminate the light arriving directly from the light source. It must be possible to move the central part of the diaphragm away from the light beam in such a manner that it returns exactly to its original position.

The distance between the lens L_2 and the diaphragm D_1, and the focal length F_2* of the lens L_2 are to be chosen so that the image of D_1 completely covers the receiver R.

For an initial incident flux of 1,000 units, the absolute precision of each reading shall be better than 1 unit.

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* For L_2 a focal diameter of about 80 mm is recommended.

2.2. MEASUREMENTS

The following reading shall be taken:

Reading (T_1)	With sample	With central part of D_2	Quantity represented
T_1	no	no	Incident flux in initial reading
T_2	yes (before abrasion)	no	flux transmitted by the new material in a field of 24°
T_3	yes (before abrasion)	yes	flux diffused by the new material
T_4	yes (after abrasion)	yes	flux diffused by the abraded material

2.3. OPTICAL QUANTITIES DEFINITIONS

2.3.1. The luminous transmittance is given by:

$(T_2/T_1) \times 100$

2.3.2. The light diffusion before abrasion is given by:

$(T_3/T_2) \times 100$

2.3.3. The light diffusion after abrasion is given by:

$(T_4 - T_3) \times 100/T_2$.

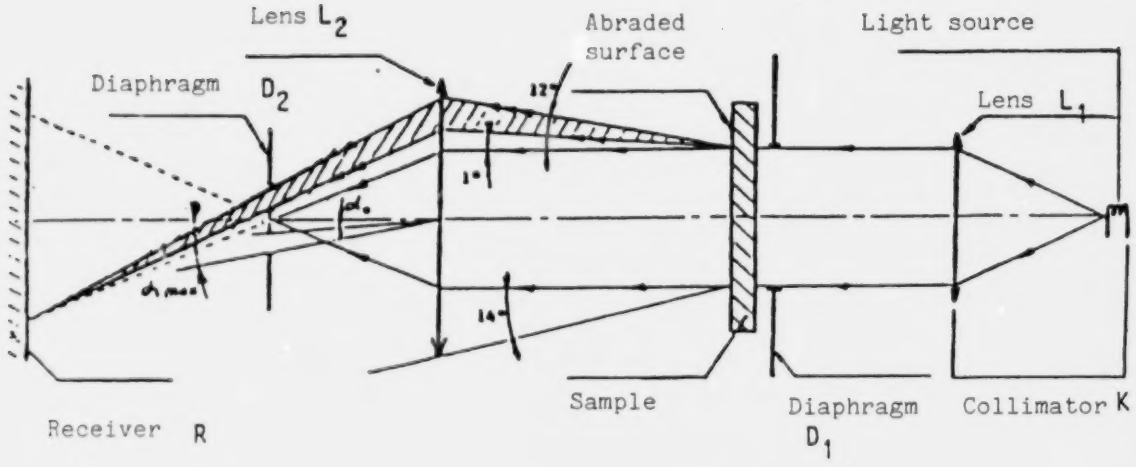
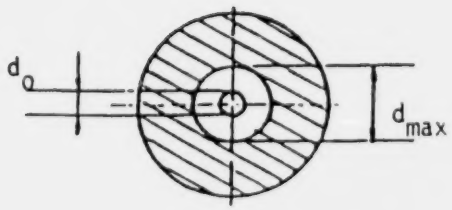


Figure 1: Test equipment



$d_o = 0.0349\ F_2$
$d_{max} = 0.425\ F_2$

Figure 2: Annular diaphragm D_2"